# Computer Engineering BS Degree
## Curriculum Chart
### 2010-2011

## Math
- **MATH 19A**
  - Calculus
- **MATH 19B**
  - Calculus
- **MATH 21**
  - Linear Algebra
- **MATH 23A**
  - Multivariable Calculus
- **EE 103**
  - Signals & Systems

## Science
- **PHYS 5A/L or 6A/L**
  - Mechanics
- **PHYS 5B/M or 6B/M**
  - Waves
- **CMPE 9**
  - Statics, Dynamics, and Biomechanics (recommended for Robotics and Control concentration)

## Core Courses
- **CMPE 12/L**
  - Computer Systems & Assembly Language
- **CMPE 100/L**
  - Logic Design
- **CMPE 110**
  - Computer Architecture
- **CMPE 112/L**
  - Micro Systems
- **CMPE 125/L**
  - Logic Design

## System Programming
- **CMPS 111**
  - OS
- **CMPS 115**
  - Software Methodology
- **Elective**
  - Upper Division or graduate elective from Approved List

## Robotics and Control
- **CMPS 115**
  - Software Methodology
- **CMPE 118/L**
  - Introduction to Mechatronics
- **EE 154**
  - Feedback Control Systems

## Concentrations
(choose one)

### Computer Systems
- **CMPS 111**
  - OS
- **CMPE 115/L**
  - Network Programming
- **CMPE 150/L**
  - Networks
- **CMPE 151/L**
  - Network Administration
- **CMPE 153**
  - Digital Signal Processing
- **CMPE 167/L**
  - Sensing & Sensor Technologies/Lab
- **AMS 114**
  - Intro to Dynamical Systems
- **CMPE 215**
  - Models of Robotic Manipulation
- **CMPE 242**
  - Applied Feedback Control

## Networks
- **CMPS 111**
  - OS
- **CMPE 125/L**
  - Logic Design w/ Verilog
- **CMPE 150/L**
  - Networks
- **CMPE 155/L**
  - Network Programming
- **CMPE 151/L**
  - Network Administration
- **CMPE 240**
  - Intro to Linear Dynamical Systems
- **AMS 114**
  - Intro to Dynamical Systems
- **CMPE 215**
  - Models of Robotic Manipulation
- **CMPE 242**
  - Applied Feedback Control

## Digital Hardware
- **EE 171/L**
  - Analog Electronics
- **CMPE 174**
  - Tools for Digital Systems Design
- **CMPE 173/L**
  - High Speed
- **CMPE 125/L**
  - Logic w/ Verilog

## Computer Engineering Design Project II:
- **CMPE 123B or CMPE 195:** Senior Thesis
- **Project portfolio**
  - (http://www.ce.ucsc.edu/portfolio), exit survey, and interview

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*Preferred
**Students who complete Math 21 and Math 24 (or the equivalents) in lieu of AMS 10 and 20 are strongly encouraged to take the Matlab self-paced tutorial [http://matlab-training.soe.ucsc.edu](http://matlab-training.soe.ucsc.edu), or CMPE 8, prior to enrolling into EE 101/L
* May substitute with CMPS 5J AND CMPS 11
**COMPUTER ENGINEERING BS DEGREE CURRICULUM**

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**Approved List of Upper Division Electives**

- AMS 147 Computational Methods and Applications
- CMPE 108 Data Compression
- CMPE 112 Computer and Game Console Architecture
- CMPE 113 Parallel Programming
- CMPE 118/L Intro to Mechatronics
- CMPE 125/L Logic Design with Verilog
- CMPE 126/L Adv. Logic Design
- CMPE 127 Comp.-Aided Synth. of VLSI
- CMPE 131 Human-Computer Interaction
- CMPE 135/L Electro. Fields and Waves
- CMPE 136 Software Design Project
- CMPE 140 Artificial Intelligence
- CMPE 142 Machine Learning and Data Mining
- CMPE 146 Game AI
- CMPE 147 Computational Methods and Applications
- CMPS 104A Compiler Design I
- CMPS 104B Compiler Design II
- CMPS 109 Advanced Programming
- CMPS 111 Operating Systems
- CMPS 116 Software Design Project
- CMPS 122 Computer Security
- CMPS 129 Data Storage Systems
- CMPS 130 Computational Models
- CMPS 132 Computational Complexity
- CMPS 133 Artificial Intelligence
- CMPS 140 Artificial Intelligence
- CMPS 142 Machine Learning and Data Mining
- CMPS 146 Game AI
- CMPS 160/L Computer Graphics
- CMPS 161/L Visualization & Computer Animation
- CMPS 164/L Game Engines and Game Engines Lab
- CMPS 180 Database Systems
- CMPS 181 Database Systems II
- CMPS 190X Methods of Cryptography
- EE 127 & 128 Interdis. System Design Project I/II
- EE 130/L Optoelectronics & Photonics
- EE 135/L Electro. Fields and Waves
- EE 136 Engr. Electromagnetics
- EE 145/L Properties of Materials
- EE 151 Communications Systems
- EE 152 Introduction to Wireless Communications
- EE 153 Signal Processing
- EE 154 Feedback Control Systems
- EE 171/L Analog Electronics
- EE 172/L Linear/Nonlin. Circuits
- EE 175/L Energy Generation and Control
- EE 177 Device Electronics
- ISM 206 Optimization Theory and Appl.
- I have discussed the BS/MS program with my advisor.

**STUDENT’S NAME:** ___________________________  **FACULTY ADVISOR:** ___________________________

**STAFF ADVISOR:** ___________________________

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*Approved List of Ethics Courses: CMPE 80E Engineering Ethics; PHIL 22 Intro to Ethical Theory: Contemporary Moral Issues; PHIL 24 Intro to Contemporary Ethics; PHIL 28 Environmental Ethics; BME 80G/PHIL80G/CHEM80G Bioethics in the 21st Century: Science, Business, and Society.*

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Watch for CEFULs: CE Faculty-Undergraduate Lunches, regularly scheduled throughout the year, CE’s free lunch program